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BOOK REVIEW

SMITH, DAVID, S. 1968. Insect Cells. Their Structure and Function. Oliver and Boyd Ltd., Edinburgh, Scotland. xvii + 372 pp., cxviii plates. Cloth bound. $16.00 U. S. A.

With the publication of this volume Smith has done for Entomology what D. W. Fawcett in his *An Atlas of Fine Structure, The Cell* (1966) did for Vertebrate Zoology. He has produced a concise and beautifully illustrated summary of our current knowledge of the fine structure and function of insect cells.

Each tissue and tissue product of the insect body is illustrated by one or more carefully chosen transmission or scanning electron micrographs, many of which originated in Smith's laboratory. The cells and cell products treated are: integument, muscle, neuromuscular junctions, nervous system, corpus cardiacum, corpus allatum, compound eye, tracheal system, dorsal vessel, haemocytes, pericardial cells, oenocytes, fat body, mycetocytes, salivary glands, silk glands, fore-gut, mid-gut, hind-gut, peritrophic membrane, rectal papillae, Malpighian tubules, anal papillae, testis, vas deferens, accessory glands, ovary and spermatheca. Although 24 species of insect are represented in the book, the majority of the plates contain micrographs prepared from only five: *Oncopeltus fasciatus, Ephestia kühniella, Carausius morosus, Calliphora erythrocephala,* and *Periplaneta americana*. In all the plates abbreviations are minimal.

The text of the book includes up-to-date background summaries of the basic morphology and physiology of each of the tissues illustrated. In each summary the reader is referred, for further information, to the relevant chapter in the sixth edition of V. B. Wigglesworth's *The Principles of Insect Physiology* (1965). Reference to each of the micrographs is made in the text and the main features contained in these illustrations are mentioned in the captions. Each summary is supplied with a list of references covering the principal contributions made in that area. Throughout the text reference is made to ultrastructural studies of comparable

tissues in vertebrate animals, a consistency which will undoubtedly enhance the value of the book for general biologists as well as broadening the perspective of entomologists. A selected list of references to papers published after the submission of the manuscript (June 1967) is added as an appendix. Throughout the text Smith is careful also to mention avenues worthy of further investigation.

No experience is required, on the part of the reader, in the interpretation of electron micrographs. The necessary background is provided in the introduction in the form of a foldout illustration. On this is centered a diagram of the "generalized cell" and its organelles. Each organelle is also illustrated by a small electron micrograph prepared from insect material. Each of these micrographs is numbered and, in a key on either side of the diagram, its role in cell physiology is summarized.

Although the manufacture of the book is good, the book is very heavy (2.75 lbs.) for its linear dimensions and it is possible that the strength of the binding will prove insufficient to support the weight of the pages over a long period of time.

The editing of the book is excellent. I list here the few typographical errors noticed. On page 220, mention is made in the last line of the caption to a plate which is not included. On page 232 it is the *outer* not the inner surface of the crop that bears a lattice work of visceral muscle fibres. On page 256 the magnification of the plate and the insert are reversed. Exception is taken also to the statement on page 183 that insects possess no sex hormones. Beginning in 1963 Jacqueline Naisse published a series of papers proving convincingly that androgens are produced by the developing testes of the lampyrid beetle *Lampyris noctiluca L.*

The addition of a conventional photomicrograph of the tissue under discussion in each section would have eased the reader's difficulty in positioning the electron micrographs that follow in their relative positions in the tissue.

These are minor criticisms of a text that will probably become a classic. This book should be present in the personal collection of every insect morphologist and physiologist. The reason is that most of the papers cited on insect ultrastructure have been published in journals few of which are generally perused by entomologists — an enlightening observation on the origin of most contributions in this field.

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